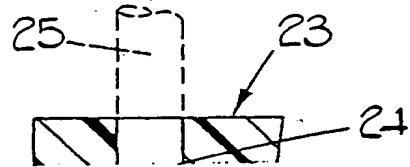


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(54) **Sharpener for pointed objects**
(57) A sharpener for a pointed end 25 of circular cross section, and in particular a dart point, comprises an abrasive block 21 moulded into a plastics block 20. A hole in the block 20 has a cylindrical portion 24 for closely receiving a cylindrical part of the pointed end 25, and a tapered portion 26. The block 21 has a surface tangential to a desired

conical point on the end 25, so that rotation of the latter effects sharpening. The block 20 is preferably provided with three holes 24, 26 in which three darts may be simultaneously located. In another embodiment, the tapered portion of the hole is formed in an abrasive block, and the cylindrical portion is formed in a piece of resilient plastics material secured to the block.



ERRATUM

SPECIFICATION NO 2040744A

Page 2, line 5, after drawings. Start new paragraph insert New claims or amendments to claims filed on 25th April 80 Superseded claims 1, 2, 5 New or amended claims:-

1. A sharpener for a pointed end of circular cross-section, comprising a block having an elongate hole therein and provided with guide means engageable with a cylindrical surface of said object, for axially aligning said object with said hole, the inner surface of said hole including an abrasive portion which is inclined to the hole axis and which is engageable with said pointed end of the object so that relative rotation between said object and said block generates a desired sharpened configuration on said object.
2. A sharpener as claimed in claim 1 in which said guide means comprises a part of resiliently deformable material having an aperture adapted to receive a cylindrical surface of said object as a close fit.
5. A sharpener as claimed in any of claims 1 to 3 in which said block is of synthetic resin material and said abrasive portion is provided by an insert of abrasive material.

THE PATENT OFFICE
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conical point on the end 25, so that rotation of the latter effects sharpening. The block 20 is preferably provided with three holes 24, 26 in which three darts may be simultaneously located. In another embodiment, the tapered portion of the hole is formed in an abrasive block, and the cylindrical portion is formed in a piece of resilient plastics material secured to the block.

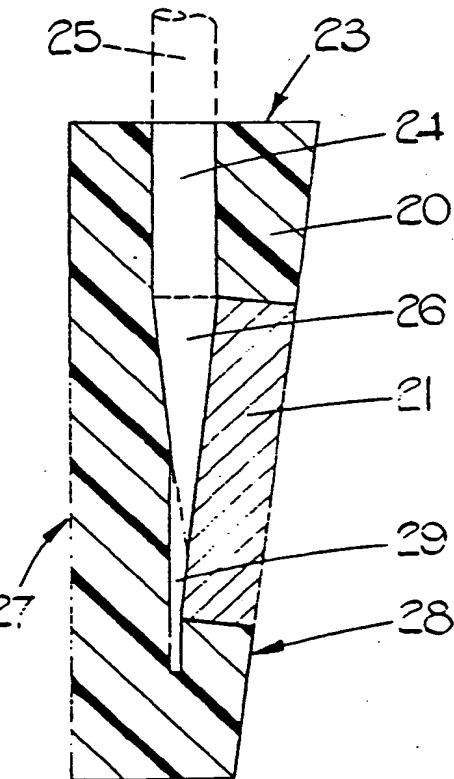


FIG.6.

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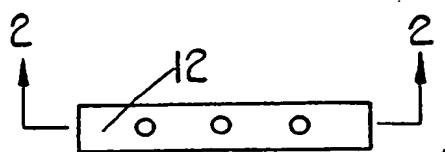


FIG.1.

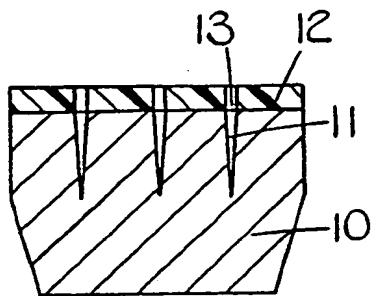


FIG.2.

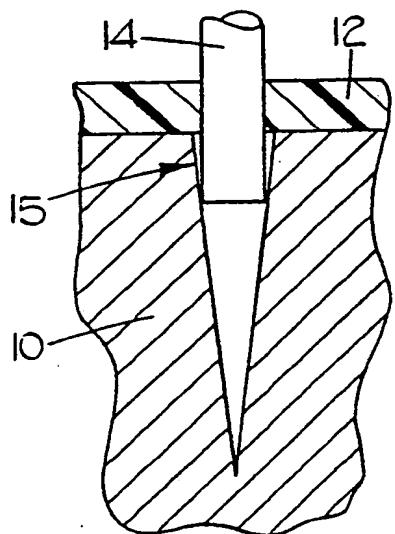


FIG.3.

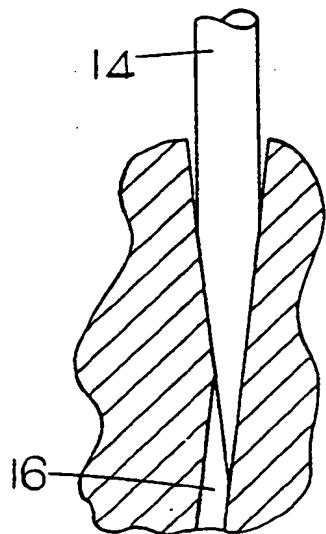


FIG.4.

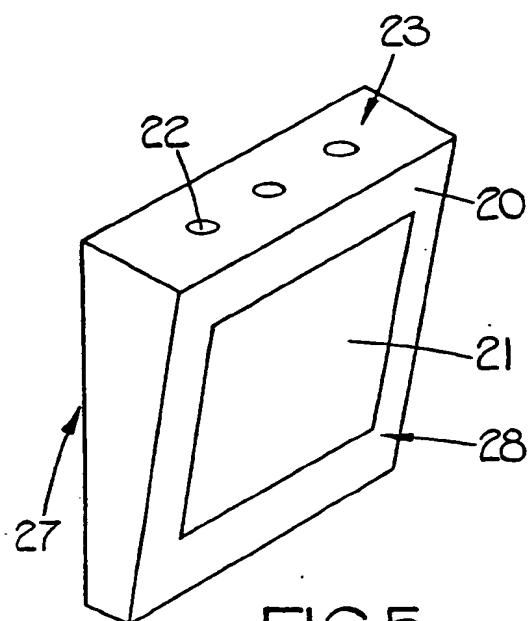


FIG.5.

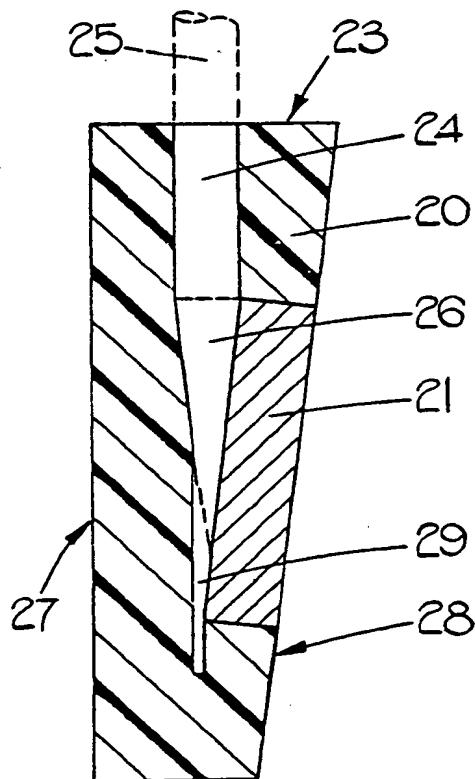


FIG.6.

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SPECIFICATION

Sharpening device for pointed objects

5 This invention relates to a sharpening device for pointed ends of circular cross section, and in particular to a device for sharpening the points of throwing darts.

According to the invention a sharpener for a 10 pointed end of circular cross section comprises a block having a hole therein and provided with guide means engageable with a cylindrical surface of said object, for axially aligning said object with said hole, said hole having therein axially spaced from said 15 guide means, an abrasive surface engageable with said pointed end of the object so that relative rotation between said object and said block generates a desired sharpened configuration on said object.

20 Particular embodiments of the invention will now be described by way of example only and with reference to the accompanying drawings in which:-

Figure 1 is a top view of the device,

Figure 2 is a section on line 2-2 in Figure 1,

25 Figure 3 is an enlarged view of a part of Figure 2, Figure 4 is a modification of Figure 3.

Figure 5 is a pictorial view of an alternative embodiment and

30 Figure 6 is a section, to a larger scale, through the embodiment of Figure 5.

The device shown in Figures 1, 2 and 3 is intended for locating and sharpening the points of throwing darts, and comprises a block 10 of abrasive material, for example a suitable grade of carborundum, 35 having three tapered holes 11 therein, in equi-spaced parallel relationship. Secured to the top of the block 10 is a part 12 of resilient plastics material having three holes 13 therein, axially aligned with the respective holes 11. As shown in Figure 3 the

40 holes 13 are dimensioned so as to be an interference fit on a cylindrical surface of a dart point 14. The ends 15 of the holes 11 adjacent the part 12 have a radial clearance around the cylindrical surface of the point 14. The included angle of the taper of the holes 45 11 is approximately 11°, corresponding to the desired sharpened configuration of the point 14.

The spacing of the holes 11 is such that three darts can be inserted simultaneously in the block 10, and retained therein by the part 12. Rotation of the darts 50 relative to the block 10 causes sharpening of their points by the abrasive material of the block.

To ensure that the tips of the points 14 are not flattened by engagement with the bottoms of the holes 11, further holes 16, as shown in Figure 4 55 interpenetrate with the holes 11 in such a way that part of the taper extends right up to the hole axis, and is therefore effective to provide a sharp tip. The holes 16 provide clearance spaces into which any material removed from the block 10 or dart points 14 60 may fall.

The outside of the block 10 may be covered with a thin layer of plastics material to reduce friction between the block 10 and a container in which it may be inserted.

65 The embodiment shown in Figures 5 and 6 has a

block 20 moulded of thermo-plastics material, for example polypropylene, and incorporates a further block 21 of 120 grit abrasive material. The block 21 is in the form of a rectangular prism and the block 20 is 70 moulded with the block 21 in situ.

Three equi-spaced holes 22 extend downwardly from a top surface 23 of the block 20. The holes 22 have an upper, parallel portion 24 which is a close fit on a cylindrical surface of a dart point, indicated at 75 25, and a further tapered portion 26 with an included angle of approximately 11°. The block 20 has a side 27 normal to the surface 23 and an opposite side 28 at an angle of approximately 5½° to the side 27. The outer surface of the block 21 is flush with the surface 80 27 and the inner surface of the block 21 is arranged to be tangential to desired conical surfaces on the dart points 25 located in the hole portions 24, to provide sharpening surfaces for the dart points 25. A dart point 25 may thus be sharpened by rotation 85 within the block 20.

The bottoms of the holes 22 are relieved, as indicated at 29, in a similar manner to the embodiment of Figure 4, to ensure that the dart points do not bottom in the holes during sharpening. The 90 clearances 29 also provide space into which may fall material removed from the point 25 or block 21 during sharpening, and any such material may be shaken out of the hole 22 from time to time.

The spacing of the holes 22 is such that three darts 95 may be accommodated therein simultaneously, and the block may thus also provide a storage means in which the darts may also be sharpened.

CLAIMS

100 1. A sharpener for a pointed end of circular cross section, comprising a block having a hole therein and provided with guide means engageable with a cylindrical surface of said object, for axially aligning

105 said object with said hole, said hole having therein axially spaced from said guide means, an abrasive surface engageable with said pointed end of the object so that relative rotation between said object and said block generates a desired sharpened configuration on said object.

110 2. A sharpener as claimed in claim 1 in which said guide means comprises a part of resiliently deformable material having a hole adapted to receive a cylindrical surface of said object as a close fit.

115 3. A sharpener as claimed in claim 1 or claim 2 in which said block has a plurality of said holes in substantially parallel relationship.

4. A sharpener as claimed in any preceding claim in which said block is of said abrasive material.

120 5. A sharpener as claimed in any of claims 1 to 3 in which said block is of synthetic resin material and said abrasive surface is provided by an insert of abrasive material.

6. A sharpener as claimed in any preceding claim 125 in which the, or each, hole is provided at the end thereof which is remote from said guide means, with a clearance space which leaves intact a generating surface for said sharpened configuration.

7. A sharpener as claimed in any preceding claim 130 in which said abrasive surface is arranged to gener-

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ate a substantially conical sharpened configuration.
8. A sharpener for a pointed end on an object of
circular cross section, substantially as hereinbefore
described with reference to and as shown in any of
5 the accompanying drawings.

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